NEXCOM International Co., Ltd.

Industrial Computing Solutions

Fanless Computer

NISE 90

User Manual

NEXCOM International Co., Ltd.
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www.nexcom.com

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Preface

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Acknowledgements

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

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RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

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Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

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Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

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Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

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Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the NISE 90 package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Qty
1	4NCPM00302X00	Terminal Blocks 3P Phoenix Contact:1777992	1
2	50311F0110X00	Flat Head Screw Long FEI:F3x5ISO+NYLOK NIGP	4
3	60177A0238X00	NISB90 Quick Reference Guide	1
4	602DCD0428X00	NISE90 CD Driver	1

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Ordering Information

The following information below provides ordering information for NISE 90.

- **Barebone**
  - NISE 90 (P/N: 10J00009000X0)
    Intel Atom E620 0.6GHz DIN Rail Fanless System with 512MB Memory onboard
  - NISE 91 (P/N: 10J00009100X0)
    Intel Atom E640 1.0GHz DIN Rail Fanless System with 1G Memory onboard

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Chapter 1: Product Introduction

Overview

Key Features

- On-board Intel® Atom™ E620 processor, 0.6GHz
- On-board DDR2 512MB memory chip
- 2x Intel® GbE LANs
- 3x USB2.0 / 1x VGA / 3x Serial Ports / 1x CAN bus
- 8CH GPI and 8CH GPO
- Support 1x 2.5" HDD drive bay
- Support 12V and 24VDC input

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Hardware Specifications

CPU Support

- On-board Intel® Atom™ Tunnel Creek E620 processor, 0.6GHz 512K Cache
- On-board Chipset: Intel® EG20T

Main Memory

- On-board DDR2 512MB memory chip, unbuffered and non-ECC support

Storage Device

- 1x 2.5" SATA HDD drive bay for optional SSD or HDD
- Support optional SATA DOM, horizontal type only

I/O Interface-Front

- 3x USB ports
- 2x RJ45 GbE LAN ports, Intel 82574L controller on-board
  Support LAN teaming function
- 3x DB9 serial ports
  COM1: Support RS232/422/485 (Selected on BIOS menu)
  COM2: Support RS232 only
  COM3: Support RS232 only
- 1x DB9 CAN Bus
  - Support CAN 2.0b protocol
  - Support both 11-bit and 26-bit identifiers
  - Support bit rates up to 1Mbps
  - Clock frequency of 40MHz

I/O Interface-Bottom

- 1x DB15 VGA port
- 1x DB15 male connector for 8CH General Purpose Input
- 1x DB15 male connector for 8CH General Purpose Output
- 3-pin DC input, support 12VDC input and 24VDC input
- 1x Power on/off switch

Supported OS

- Windows XP
- Windows Embedded Standard 2009
- Fedora 14 (Kernnel 2.6)

System Dimension

- 59mm (W) x 140mm (D) x167mm (H)

Construction

- Aluminum chassis with fanless design

Environment

- Operating temperature:
  Ambient with air flow: -5°C to 55°C
  (According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 93% (non-condensing)
- Shock protection: 20G, half sine, 11ms, IEC60068-2-27
- Vibration protection
  - Random: 0.3Grms @ 5~500 Hz according to IEC60068-2-64
  - Sinusoidal: 0.3Grms @ 5~500 Hz according to IEC60068-2-6

Certifications

- CE approval
- FCC Class A

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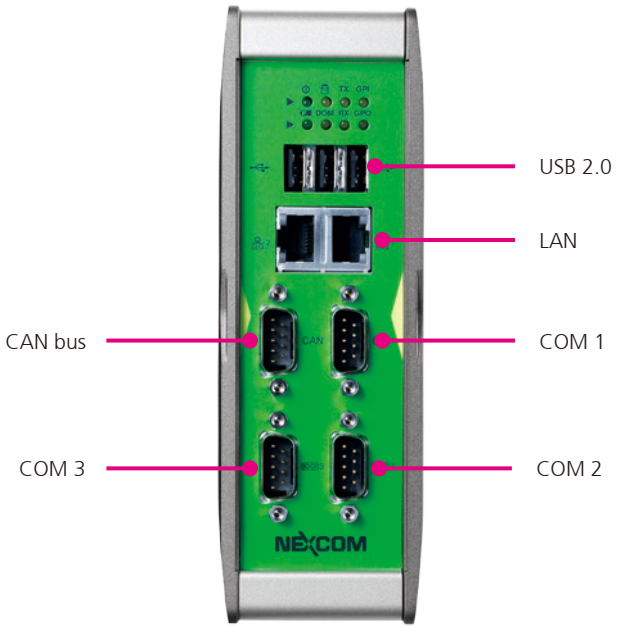
Knowing Your NISE 90

Front Panel



USB2.0 Ports

Triple USB2.0 ports to connect the system with USB2.0/1.1 devices.

CAN Bus and COM1 RS232/RS422/RS485

DB-9 CAN bus connector and serial port used to connect RS232/422/485 compatible serial devices.

COM3 and COM2

Serial ports used to connect RS232 compatible devices.

LED Indicators

Two LEDs for HDD access and power status of the system. Two LEDs indicators for COM port TX and RX signals, two programmable GPIO LEDs and a LED for battery power, replace battery when this LED is active.

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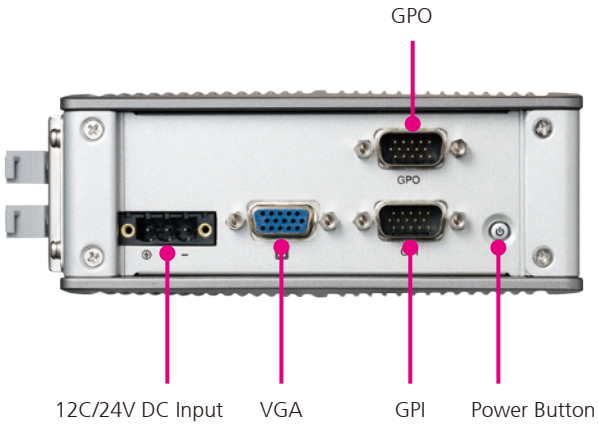
Rear Panel



12/24V DC Input

3-pin terminal block connector used to plug to a DC power supply.

GPO and GPI

The GPO and GPI connectors support 8-channel GPO and 8-channel GPI.

VGA

Used to connect an analog VGA monitor.

Power Button

Press to power-on or power-off the system.

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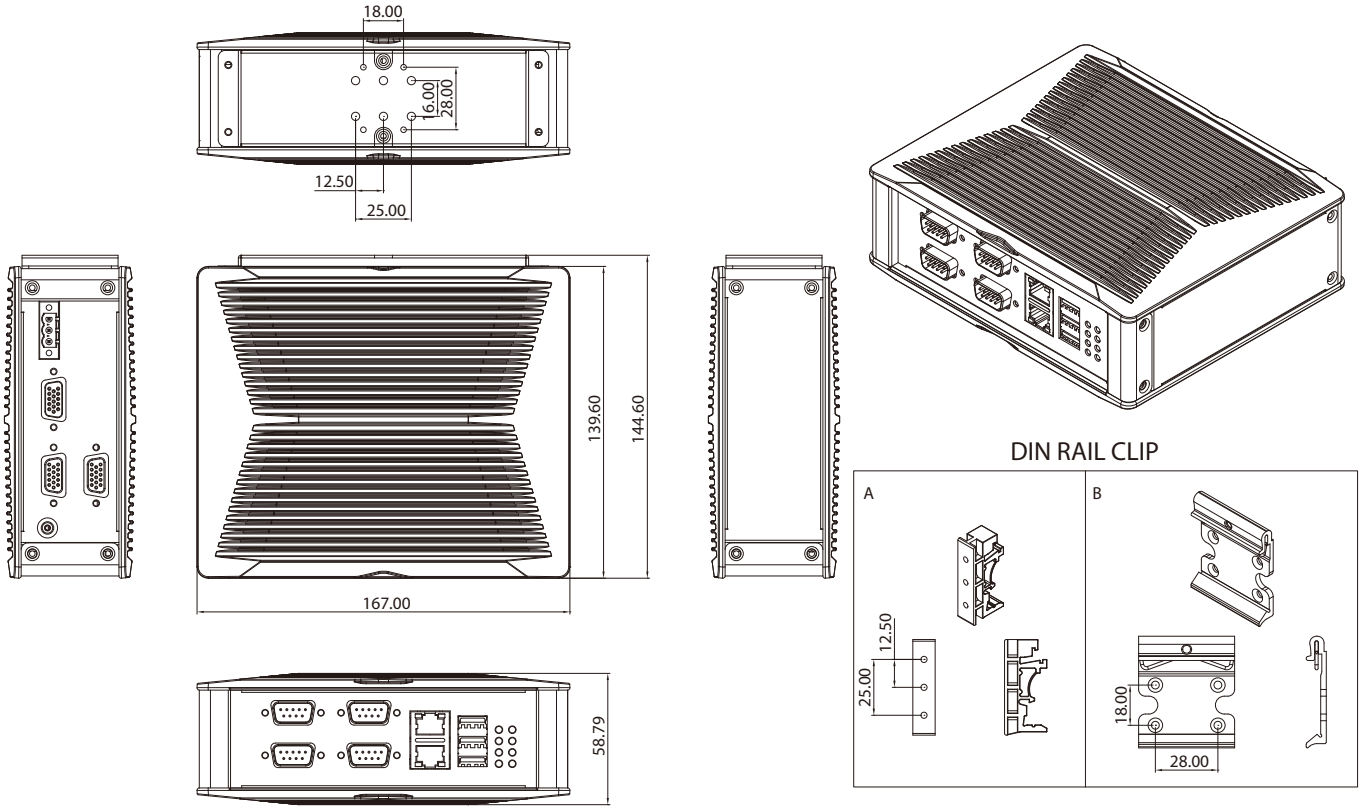
Mechanical Dimensions

NISE 90



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NISE 90 motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

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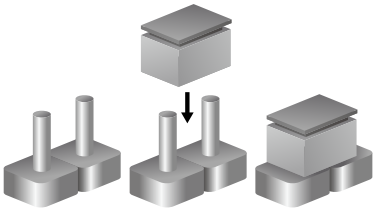
Jumper Settings

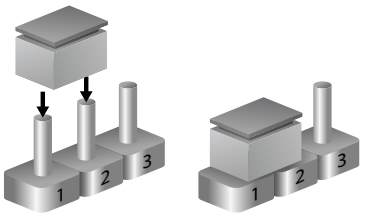
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short



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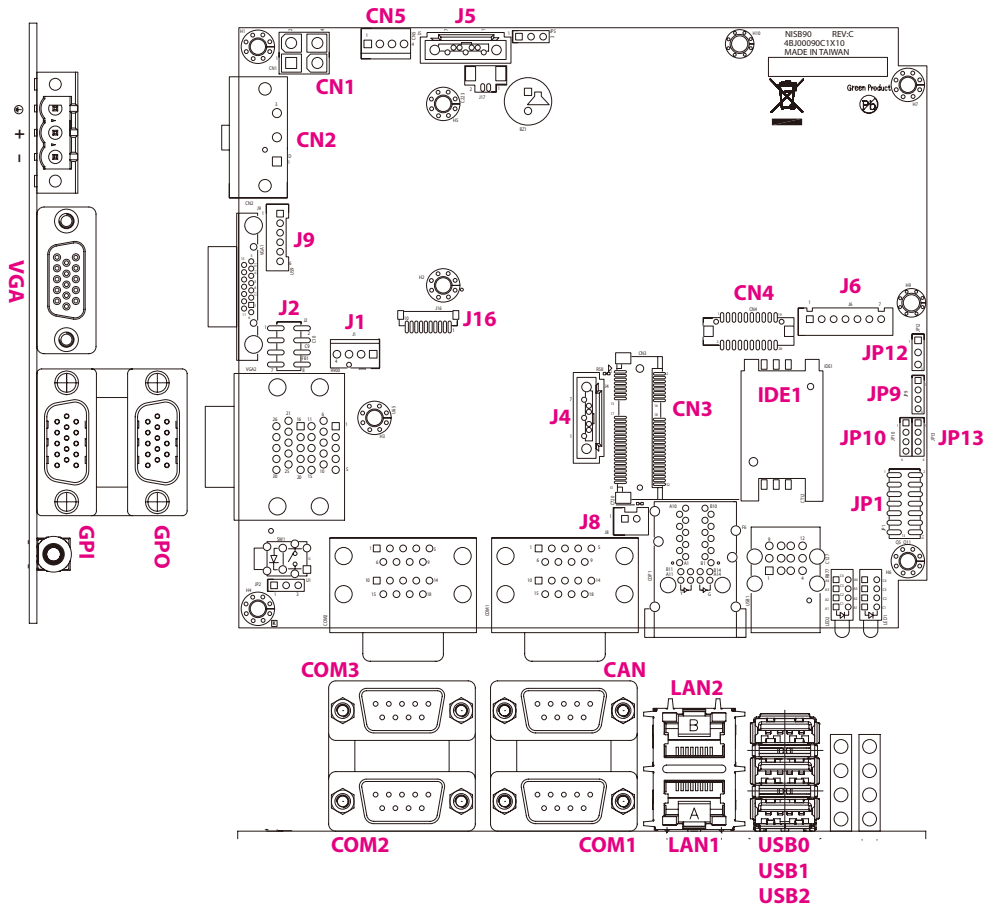
Locations of the Jumpers and Connectors for NISB 90

The figure below shows the location of the jumpers and connectors.



Jumpers

RTC Clear Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP5

Pin	Settings
1-2 On	Normal
2-3 On	Clear BIOS

1-2 On: default

LVDS Backlight Power Select Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP12

Pin	Settings
1-2 On	3.3V
2-3 On	5V

1-2 On: default

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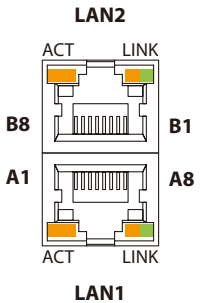
Connector Pin Definitions

External I/O Interfaces – Front Panel

LAN1 and LAN2 Ports

Connector type: RJ45 port with LEDs
Connector location: LAN1A (LAN1) and LAN1B (LAN2)



Link	Status
Steady Orange	1G network link
Steady Green	100Mbps network link
Off	10Mbps network link

Act	Status
Flashing Orange	Data activity
Off	No activity

LAN1

Pin	Definition	Pin	Definition
A1	LAN1_M0P	A8	LAN1_M3N
A2	LAN1_M0N	A9	VCC
A3	LAN1_M1P	A10	GND
A4	LAN1_M1N	A11	LAN1_ACTP
A5	LAN1_M2P	A12	LAN1_LED_ACT#
A6	LAN1_M2N	A13	LAN1_LINKP
A7	LAN1_M3P	A14	LAN1LINKMIX

LAN2

Pin	Definition	Pin	Definition
B1	LAN2_M0P	B8	LAN2_M3N
B2	LAN2_M0N	B9	VCC
B3	LAN2_M1P	B10	GND
B4	LAN2_M1N	B11	LAN2_ACTP
B5	LAN2_M2P	B12	LAN2_LED_ACT#
B6	LAN2_M2N	B13	LAN2_LINKP
B7	LAN2_M3P	B14	LAN2LINKMIX

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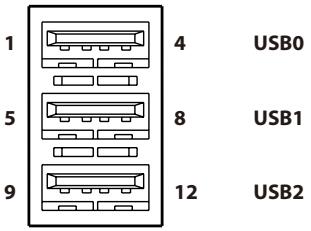
USB0, USB1 and USB2 Ports

Connector type: Triple USB 2.0 ports, Type A
Connector location: USB1



USB0

Pin	Definition
1	+5V
2	Data 0-
3	Data 0+
4	GND

USB1

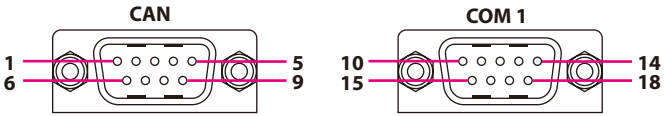
Pin	Definition
5	+5V
6	Data 1-
7	Data 1+
8	GND

USB2

Pin	Definition
9	+5V
10	Data 2-
11	Data 2+
12	GND

CAN Bus and COM1 Connector

Connector type: DB-9 port
Connector location: COM1A (CAN) and COM1B (COM1)



CAN Bus Connector Pin Definition

Pin	Definition	Pin	Definition
1	ISO_VCC5(OPTION)	6	ISO_GND
2	CANL	7	CANH
3	ISO_GND	8	NA
4	NA	9	ISO_VCC5(OPTION)
5	NA		

COM1 Connector Pin Definition

RS232		RS485		RS422	
Pin	Definition	Pin	Definition	Pin	Definition
10	DCD1	10	DATA-	10	TX-
11	RXD1	11	DATA+	11	TX+
12	TXD1	12	NC	12	RX+
13	DTR1	13	NC	13	RX-
14	GND	14	GND	14	GND
15	DSR1	15	NC	15	NC
16	RTS1	16	NC	16	NC
17	CTS1	17	NC	17	NC
18	RI1	18	NC	18	NC

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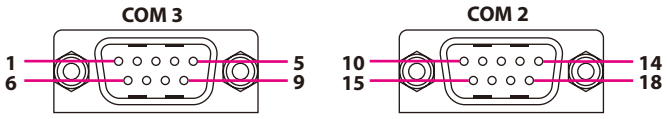
COM3 and COM2 Connector

Connector type: DB-9 port
Connector location: COM2A (COM3) and COM2B (COM2)



COM 3 Connector Pin Definition

Pin	Definition	Pin	Definition
1	DCD3	6	DSR3
2	RXD3	7	RTS3
3	TXD3	8	CTS3
4	DTR3	9	RI3
5	GND		

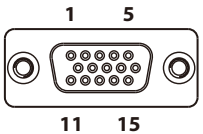
COM 2 Connector Pin Definition

Pin	Definition	Pin	Definition
10	DCD2	15	DSR2
11	RXD2	16	RTS2
12	TXD2	17	CTS2
13	DTR2	18	RI2
14	GND		

External I/O Interfaces – Rear Panel

VGA Connector

Connector type: DB-15, 15-pin D-Sub (VGA)
Connector location: VGA1



Pin	Definition	Pin	Definition
1	Red	9	+5V
2	Green	10	GND
3	Blue	11	N/C
4	GND	12	DDC Data
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDC Clock
8	GND		

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GPI & GPO Connector

Connector type: Female DB-15
Connector location: VGA2A (GPO) / VGA2B (GPI)

GPO Connector Pin Definition

Pin	Definition	Pin	Definition
1	SIO_GPO21	10	GND
2	SIO_GPO24	11	SIO_GPO22
3	SIO_GPO27	12	SIO_GPO25
4	VCC5	13	SIO_GPO28
5	GND	14	SIO_GPO29
6	SIO_GPO20	15	NA
7	SIO_GPO23	MH1	GND
8	SIO_GPO26	MH2	GND
9	VCC5		

GPI Connector Pin Definition

Pin	Definition	Pin	Definition
16	SIO_GPI61	25	GND
17	SIO_GPI64	26	SIO_GPI62
18	SIO_GPI67	27	SIO_GPI65
19	VCC5	28	SIO_GPI68
20	GND	29	SIO_GPI69
21	SIO_GPI60	30	NA
22	SIO_GPI63	MH3	GND
23	SIO_GPI66	MH4	GND
24	VCC5		

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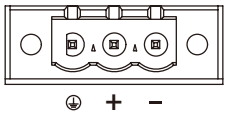
9~36V DC Power Input

Connector type: Phoenix Contact 1x3 3-pin terminal block
Connector location: CN2



Pin	Definition
1	GND
2	+12VIN OR +24VIN
3	CH_GND

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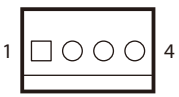
Internal Connectors

System FAN Connector

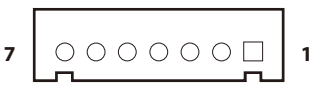
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: J1



Pin	Definition	Pin	Definition
1	GND	3	Sense
2	+12V	4	Control

LVDS Panel Backlight Connector

Connector type: 1x7 JST, 7-pin header, 2.5mm pitch
Connector location: J6



Pin	Definition	Pin	Definition
1	+5V	5	GND
2	+12V	6	GND
3	+12V	7	Panel Backlight Enable
4	Panel Backlight Brightness Control		

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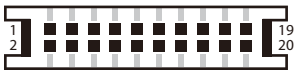
LVDS Connector

Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: CN4



Pin	Definition	Pin	Definition
1	DDC_CLK	2	DDC_DATA
3	VCC_LCD	4	LVDS_TXP0
5	LVDS_TXP3	6	LVDS_TXN0
7	LVDS_TXN3	8	VCC_LCD
9	GND	10	LVDS_TXP1
11	LVDS_CLKP	12	LVDS_TXN1
13	LVDS_CLKN	14	GND
15	GND	16	V_INV
17	LVDS_TXP2	18	V_INV
19	LVDS_TXN2	20	GND

USB 3/4 Connector

Connector type: 1x6 JST, 6-pin header, 2.0mm pitch
Connector location: J9

Pin	Definition	Pin	Definition
1	+5V	2	Data 3-
3	Data 3+	4	Data 4-
5	Data 4+	6	GND

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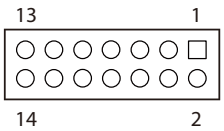
PWR_BT/RET_BT/LED/SMBUS Pin Header

Connector type: 2x7 14-pin header, 2.0mm pitch
Connector location: JP1



Pin	Definition	Pin	Definition
1	PWR_LED_N	2	PWR_LED_P
3	SATA_LED#	4	SATA_LED_P
5	SMB_C	6	SMB_D
7	VCC3V3	8	GND
9	VCC3V3	10	GND
11	POWER BOTTOM	12	GND
13	RESET BOTTOM	14	GND

Mic-in Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP9

Pin	Definition
1	MIC1_L
2	MIC_JD
3	GND
4	MIC1_R

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Line-in Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP13

Pin	Definition
1	FLIN_L
2	LIN_JD
3	GND
4	FLIN_R

Line-out Pin Header

Connector type: 1x4 4-pin header, 2.0mm pitch
Connector location: JP10

Pin	Definition
1	FLOUT_L
2	LOUT_JD
3	GND
4	FLOUT_R

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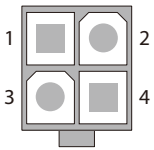
PoE Power Connector

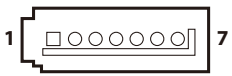
Connector type: 2x2 4-pin header, 3.5mm pitch
Connector location: CN1



Pin	Definition
1	GND
2	GND
3	VIN Power
4	VIN Power

SATA0 Connector

Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: J5



Pin	Definition	Pin	Definition
1	GND	5	SATA_RXN1
2	SATA_TXP1	6	SATA_RXP1
3	SATA_TXN1	7	GND
4	GND		

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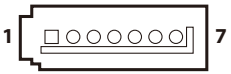
SATA1 Connector

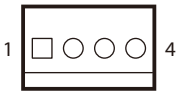
Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: J4



Pin	Definition	Pin	Definition
1	GND	5	SATA_RXN0
2	SATA_TXP0	6	SATA_RXP0
3	SATA_TXN0	7	GND
4	GND		

SATA Power Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: CN5



Pin	Definition
1	+12V
2	GND
3	GND
4	VCC5

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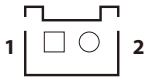
SATA-DOM Power Connector

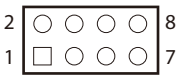
Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J8



Pin	Definition
1	VCC5
2	GND

Keyboard / Mouse Pin Header

Connector type: 2x4 8-pin header, 2.54mm pitch
Connector location: J2



Pin	Definition	Pin	Definition
1	KBMSVCC	5	LKBCLK
2	KBMSVCC	6	LMCLK
3	LKBDAT	7	GND
4	LMDAT	8	GND

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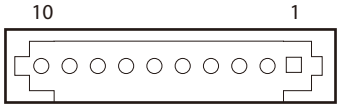
COM4 Box Pin Header

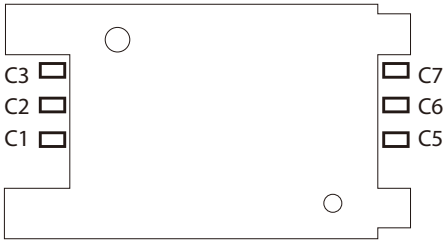
Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J16



Pin	Definition	Pin	Definition
1	SIO_DCD#4	2	SIO_RXD4
3	SIO_TXD4	4	SIO_DTR#4
5	GND	6	SIO_DSR#4
7	SIO_RTS#4	8	SIO_CTS#4
9	SIO_RI#4	10	GND

SIM Card Connector

Connector location: IDE1



Pin	Definition	Pin	Definition
C1	UIM_PWR	C2	UIM_RESET
C3	UIM_CLK	C5	GND
C6	UIM_VPP	C7	UIM_DATA

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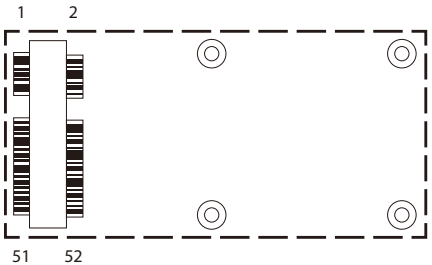
Mini-PCIe Connector

Connector location: CN3



Pin	Definition	Pin	Definition
1	WAKE#	14	UIM_RESET
2	+3VSB	15	GND
3	COEX1	16	UIM_VPP
4	GND	17	N/A
5	COEX2	18	GND
6	+1.5V	19	N/A
7	CLKREQ#	20	Disable#
8	UIM_PWR	21	GND
9	GND	22	PERST#
10	UIM_DATA	23	PCIERX-
11	REF CLK-	24	+3VSB
12	UIM_CLK	25	PCIERX+
13	REF CLK+	26	GND

Pin	Definition	Pin	Definition
27	GND	40	GND
28	+1.5V	41	+3VSB
29	GND	42	N/A
30	SMBCLK	43	GND
31	PCIETX-	44	N/A
32	SMBDATA	45	N/A
33	PCIETX+	46	N/A
34	GND	47	N/A
35	GND	48	+1.5V
36	USB_D-	49	N/A
37	GND	50	GND
38	USB_D+	51	N/A
39	+3VSB	52	+3VSB

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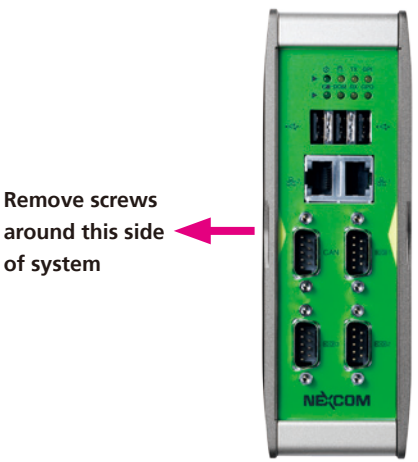
Chapter 3: System Setup

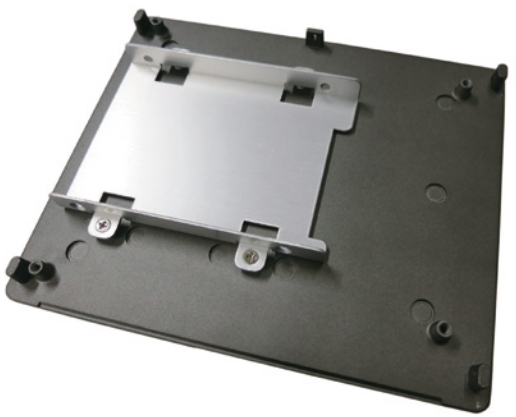
Removing the Chassis Cover

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Remove the mounting screw on the left side of the system and put them in a safe place for later use.



2. Lift up the cover and remove it from the chassis.



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Installing a SATA Hard Drive

1. With the top cover removed, place the SATA drive in the hard drive bracket with the mounting holes aligned. Then use the provided screws to secure the drive in place

2. Connect the SATA data/power cable to the connector on the hard drive.

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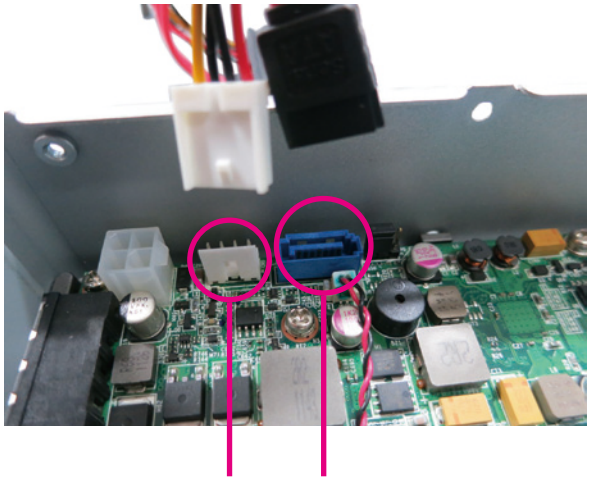
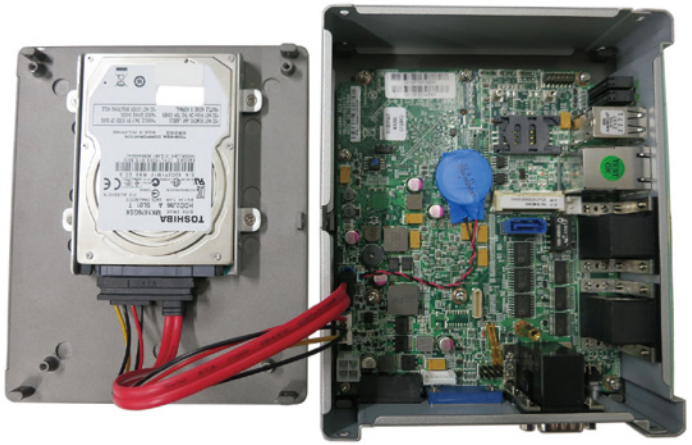
3. Connect the other side of SATA data/power cable to the PCBA.
4. Secure the cover to its original position.





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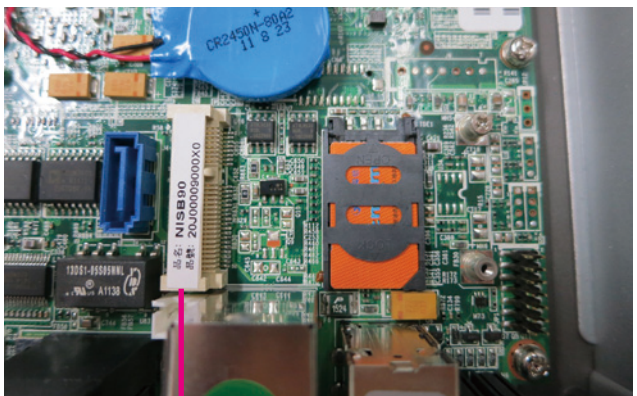
Installing a Wireless LAN Module (half-size)

1. Locate the Mini PCI Express slot on the board.



Mini PCI Express Slot

2. Fasten the wireless LAN module to the mini PCI express bracket.

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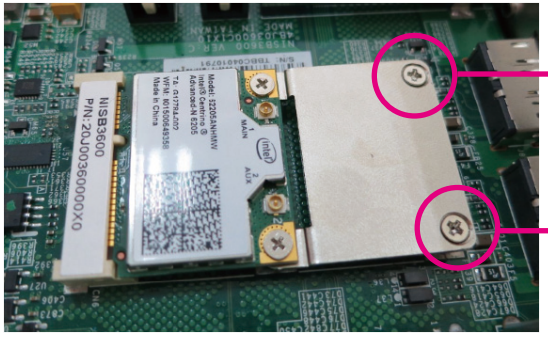
3. Insert the Wi-Fi module into the Mini PCI Express slot at a 45 degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

4. Push the module down and then secure it with mounting screws.



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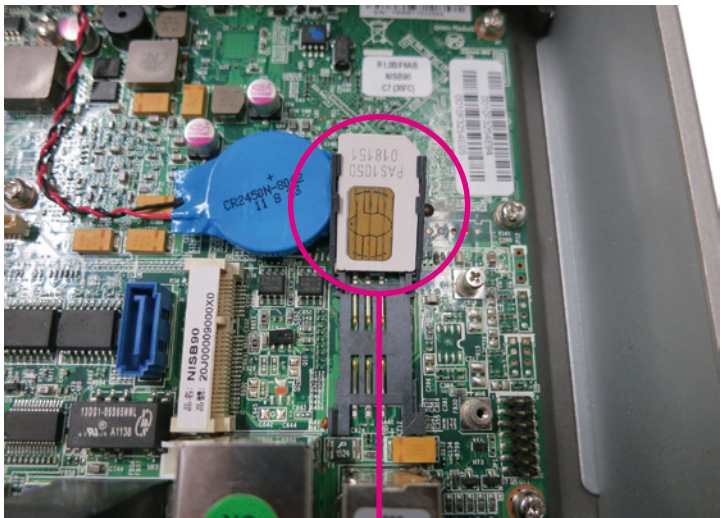
Installing a SIM Card

1. Locate the SIM card socket on the PCBA, then lift up the socket cover.

SIM card bracket

2. Slide the SIM card into the slot with the golden contacts facing inwards.



SIM card

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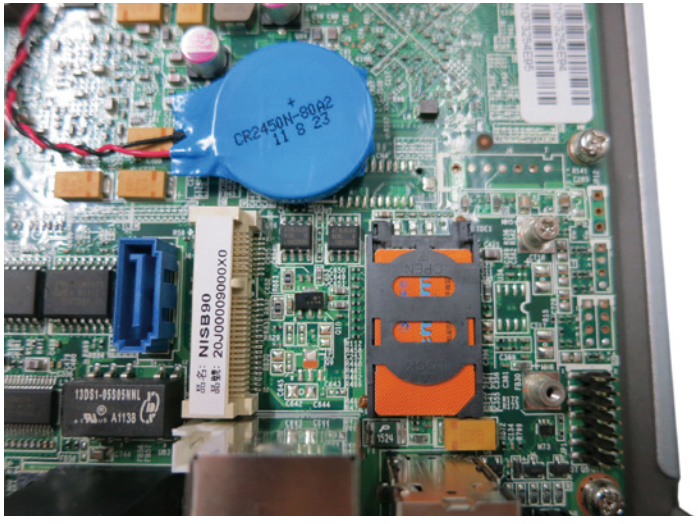
3. Push the socket cover back to its original position.



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Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the NISE 90. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

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Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

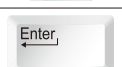
- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup.

Press the

key to enter Setup:

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub¬menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub¬menu

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Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press

.

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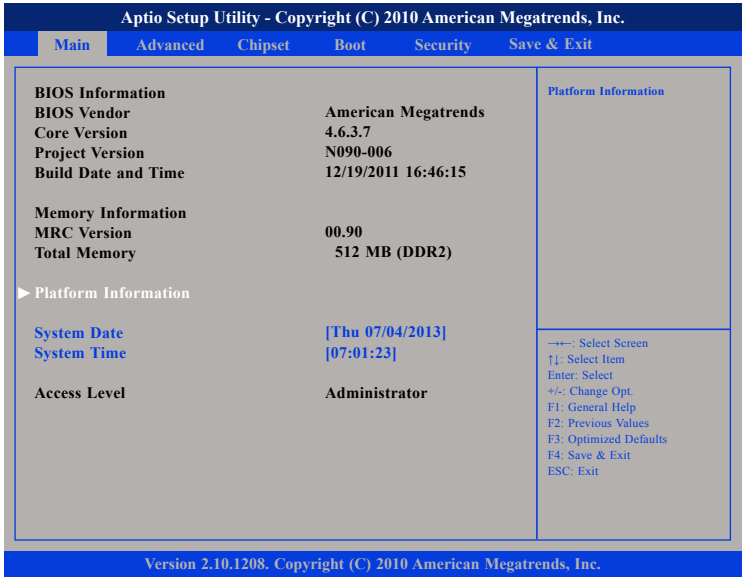
BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

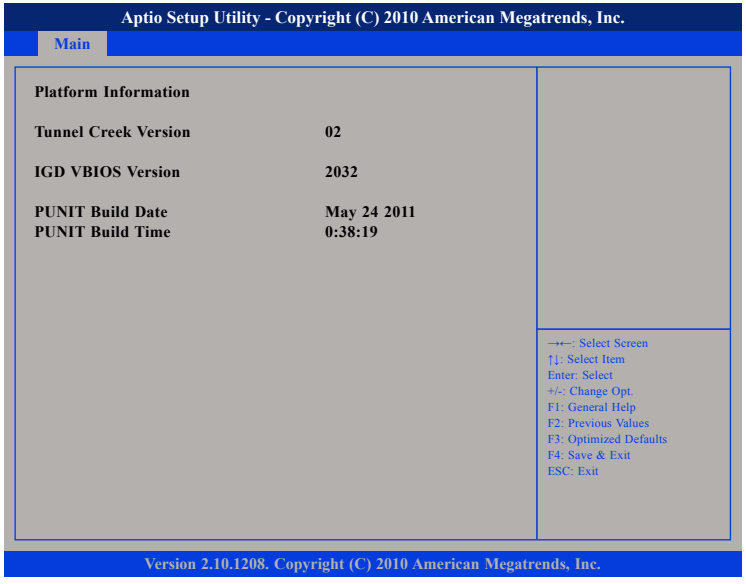
Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



Platform Information

Displays the platform information.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Access Level

Displays the access level of the current user in the BIOS.

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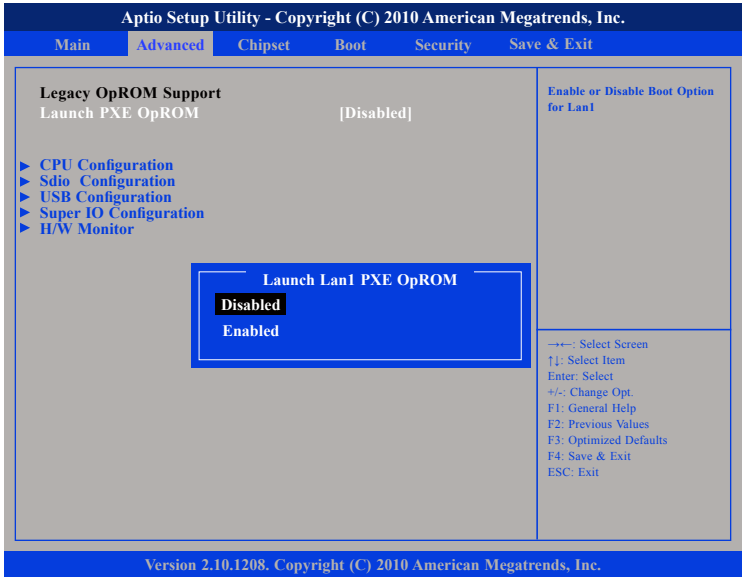
Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.

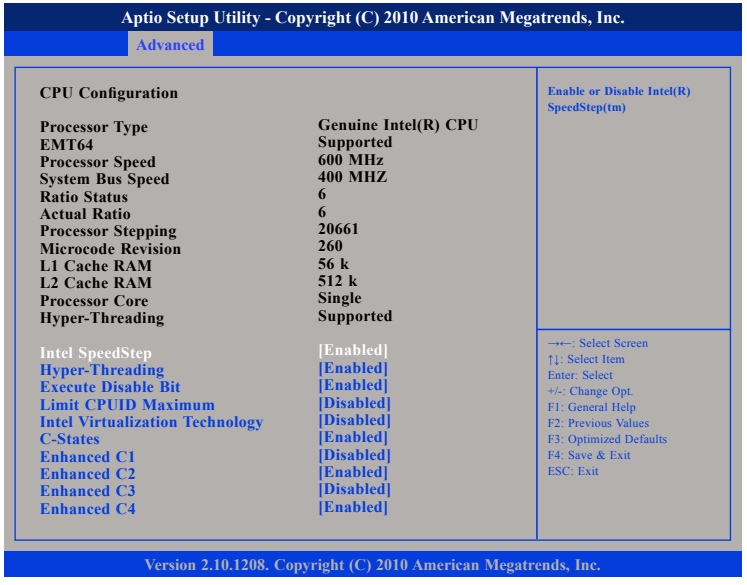


Launch PXE OpROM

Enables or disables the boot option for legacy network devices connected to LAN1.

CPU Configuration

This section is used to configure the CPU settings.



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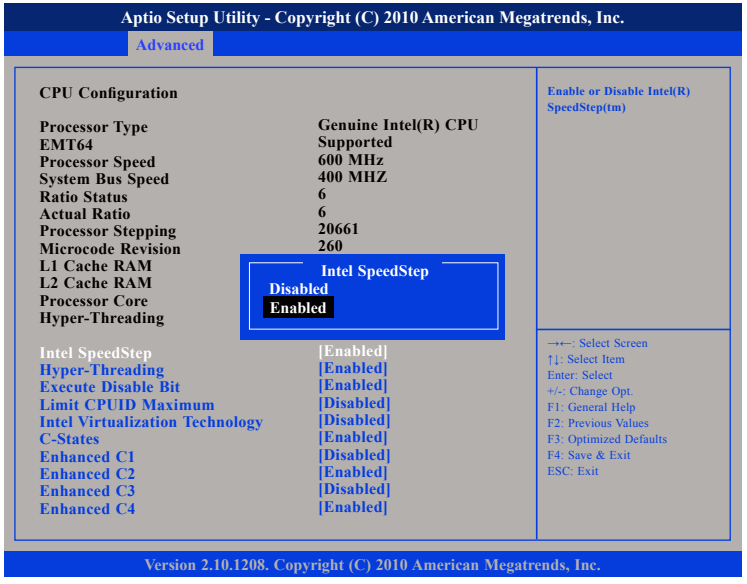
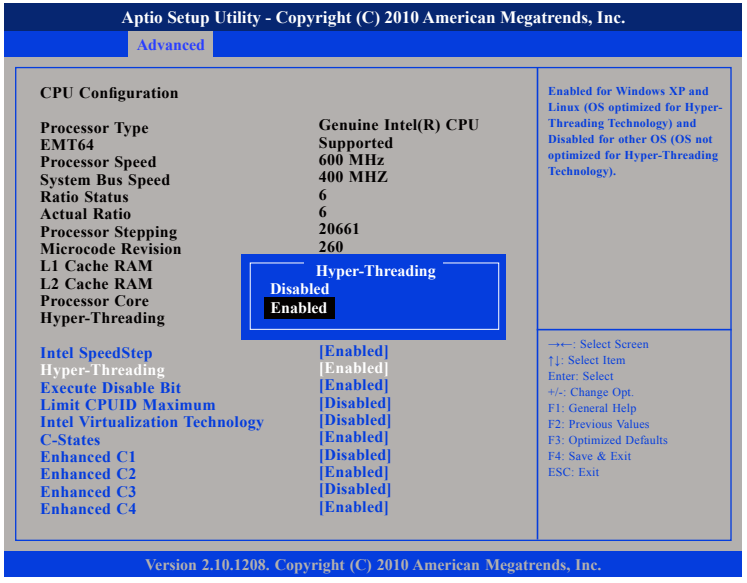
Intel® SpeedStep



This field is used to enable or disable Intel® SpeedStep™

Hyper-Threading



This field is used to enable or disable hyper-threading.

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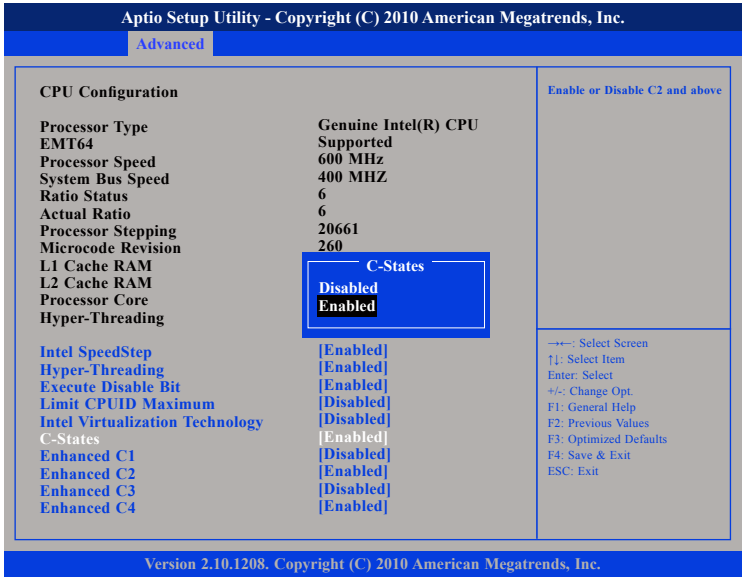
Execute Disable Bit
When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

Limit CPUID Maximum
The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

Intel® Virtualization Technology
When enabled, a VMM can utilize the additional hardware capabilities provided by vanderpool technology.

C-States



C-States
Enables or disables C2 and above.

Enhanced C1
Enables or disables Enhanced C1 state.

Enhanced C2
Enables or disables Enhanced C2 state.

Enhanced C3
Enables or disables Enhanced C3 state.

Enhanced C4
Enables or disables Enhanced C4 state.

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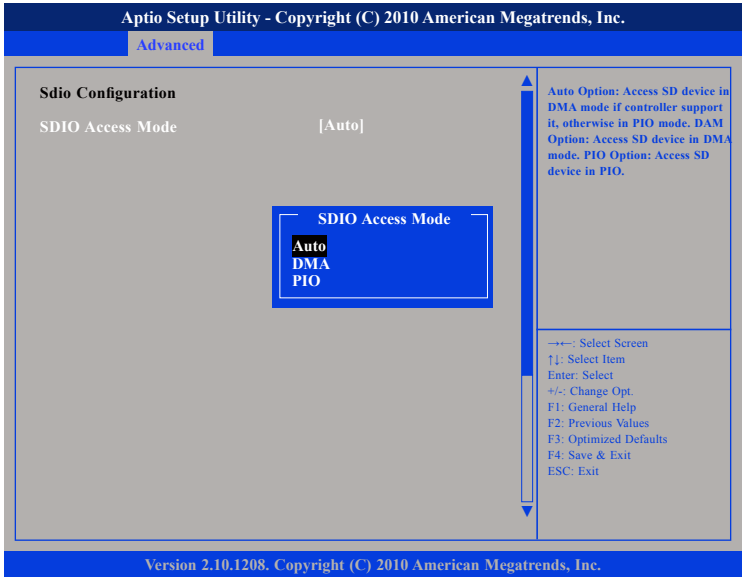
Sdio Configuration

This section is used to configure the SDIO access mode.

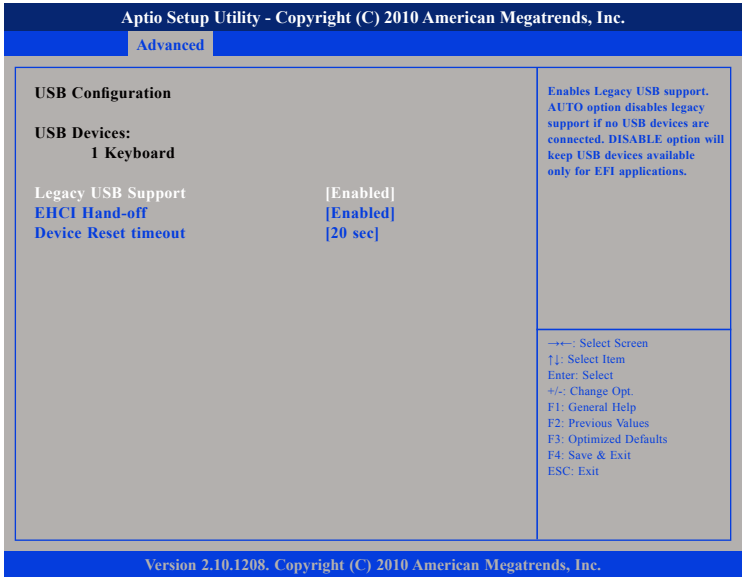

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Sdio Configuration
SDIO Access Mode [Auto]
SDIO Access Mode
Auto
DMA
PIO
Auto Option: Access SD device in DMA mode if controller support it, otherwise in PIO mode. DAM Option: Access SD device in DMA mode. PIO Option: Access SD device in PIO.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

Sdio Configuration

Auto Option Access SD device in DMA mode if controller support it, otherwise in PIO mode.
DAM Option Access SD device in DMA mode.
PIO Option Access SD device in PIO mode.

USB Configuration

This section is used to configure the USB.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Keyboard
Legacy USB Support [Enabled]
EHCI Hand-off [Enabled]
Device Reset timeout [20 sec]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Legacy USB Support

Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

EHCI Hand-off

This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

Device Reset Timeout

USB mass storage device start unit command timeout.

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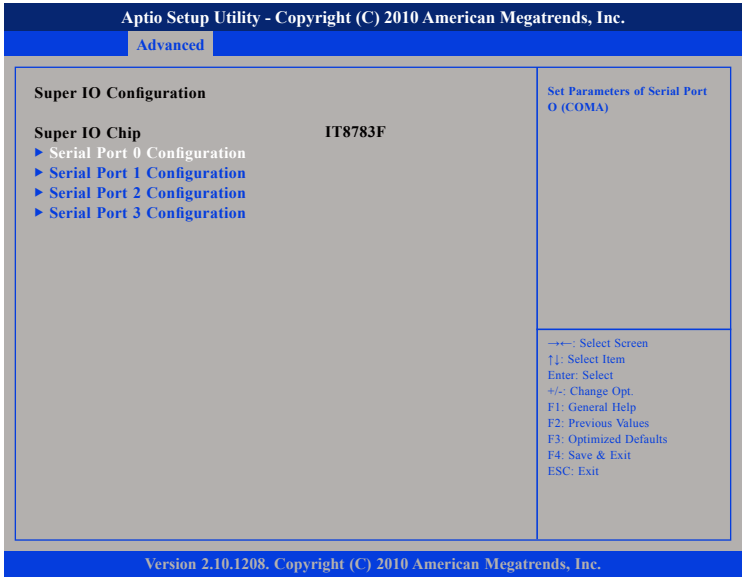
Super IO Configuration

This section is used to configure the serial ports.



Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 0 Configuration

This section is used to configure serial port 0.

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [IO=3F8h; IRQ=4;]
Onboard Serial Port 0 Mode [RS485 AUTO]
Onboard Serial Port Max Baud Rate [115200 bps]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

Serial Port

This field is used to enable or disable the serial port.

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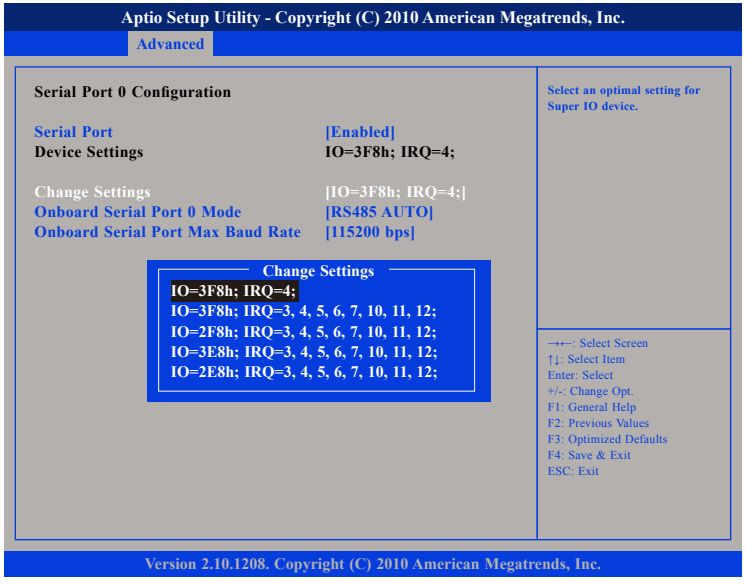
Change Settings


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [IO=3F8h; IRQ=4;]
Onboard Serial Port 0 Mode [RS485 AUTO]
Onboard Serial Port Max Baud Rate [115200 bps]
Change Settings
IO=3F8h; IRQ=4;
IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;
Select an optimal setting for Super IO device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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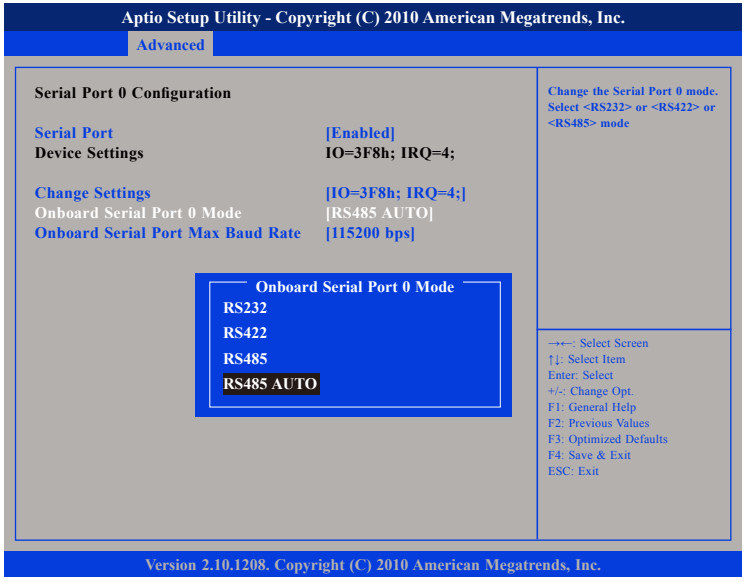
Selects an optimal setting for the Super IO device.

Onboard Serial Port 0 Mode


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [IO=3F8h; IRQ=4;]
Onboard Serial Port 0 Mode [RS485 AUTO]
Onboard Serial Port Max Baud Rate [115200 bps]
Onboard Serial Port 0 Mode
RS232
RS422
RS485
RS485 AUTO
Change the Serial Port 0 mode. Select <RS232> or <RS422> or <RS485> mode
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

This field is used to configure the mode of serial port 0 as RS232, RS422, RS485 or RS485 AUTO.

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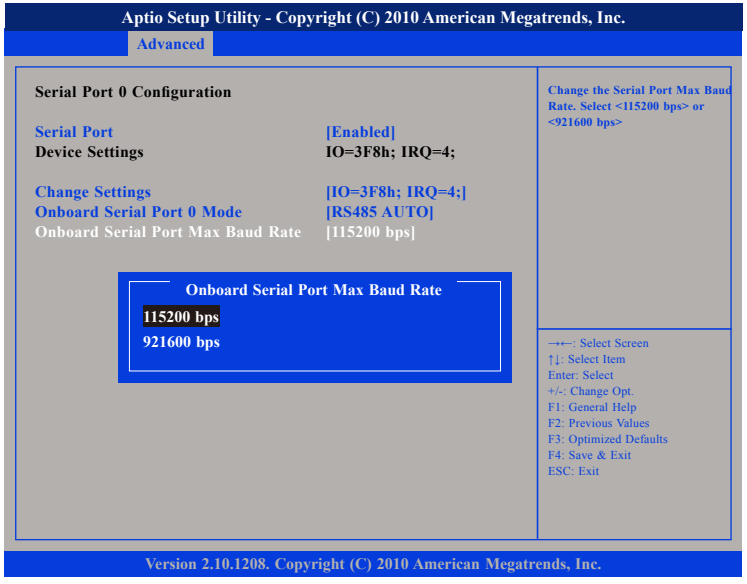
Onboard Serial Port Max Baud Rate


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Serial Port 0 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [IO=3F8h; IRQ=4;]
Onboard Serial Port 0 Mode [RS485 AUTO]
Onboard Serial Port Max Baud Rate [115200 bps]
Change the Serial Port Max Baud Rate. Select <115200 bps> or <921600 bps>
Onboard Serial Port Max Baud Rate
115200 bps
921600 bps
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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This field configures the maximum baud rate of serial port 0, the options are 115200 bps and 921600 bps.

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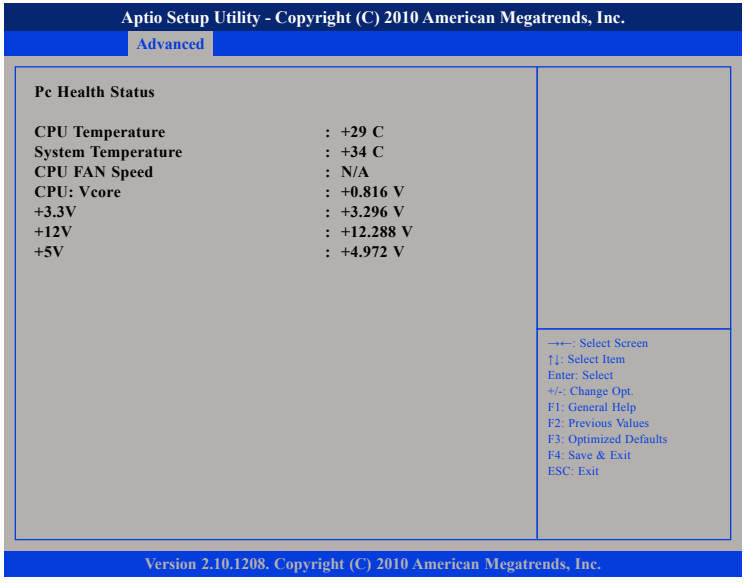
H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Advanced
Pc Health Status
CPU Temperature : +29 C
System Temperature : +34 C
CPU FAN Speed : N/A
CPU: Vcore : +0.816 V
+3.3V : +3.296 V
+12V : +12.288 V
+5V : +4.972 V
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

CPU Temperature
Detects and displays the current CPU temperature.

System Temperature
Detects and displays the current system temperature.

CPU FAN Speed
Detects and displays the CPU fan speed.

CPU: Vcore
Detects and displays the Vcore CPU voltage.

3.3V
Detects and displays 3.3V voltage.

12V
Detects and displays 12V voltage.

5V
Detects and displays 5V voltage.

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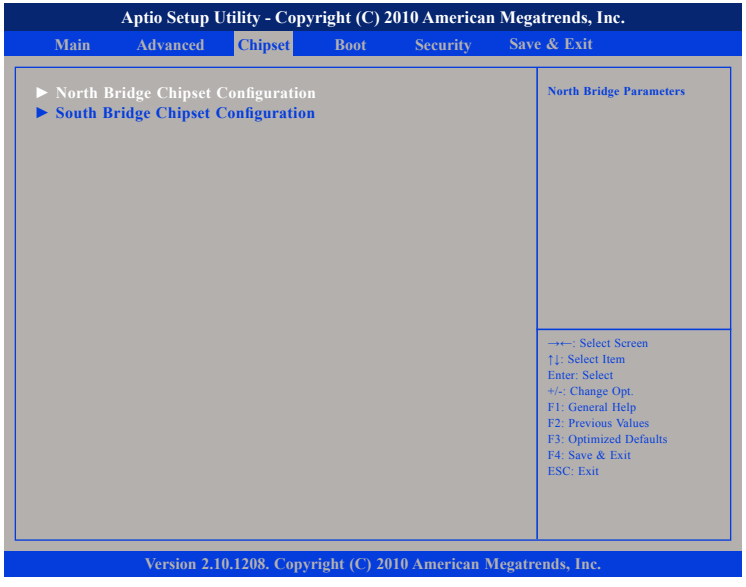
Chipset

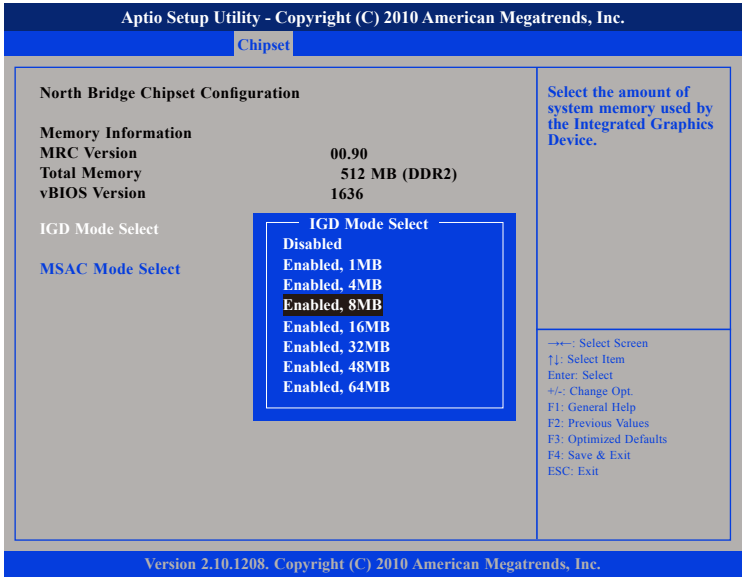
This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



North Bridge Chipset Configuration

This section is used to configure the north bridge features.

IGD Mode Select



Select the amount of system memory used by the integrated graphics device.

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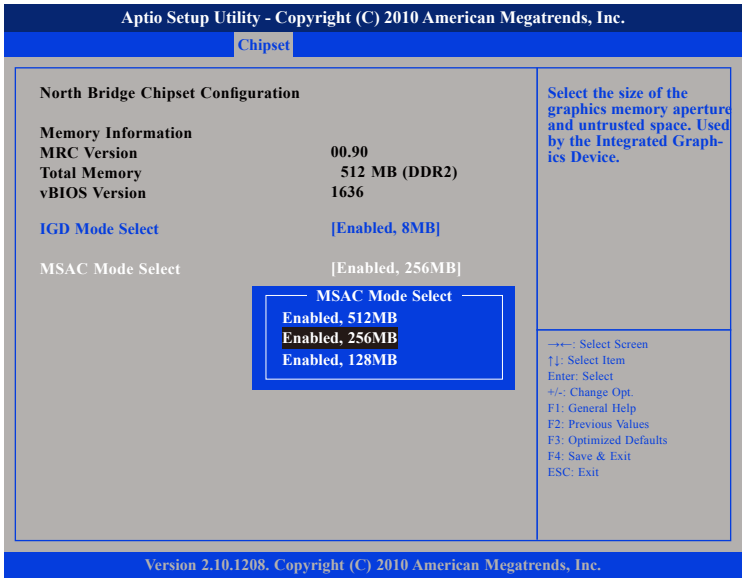
NSAC Mode Select


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Chipset
North Bridge Chipset Configuration
Memory Information
MRC Version 00.90
Total Memory 512 MB (DDR2)
vBIOS Version 1636
IGD Mode Select [Enabled, 8MB]
MSAC Mode Select [Enabled, 256MB]
MSAC Mode Select
Enabled, 512MB
Enabled, 256MB
Enabled, 128MB
Select the size of the graphics memory aperture and untrusted space. Used by the Integrated Graphics Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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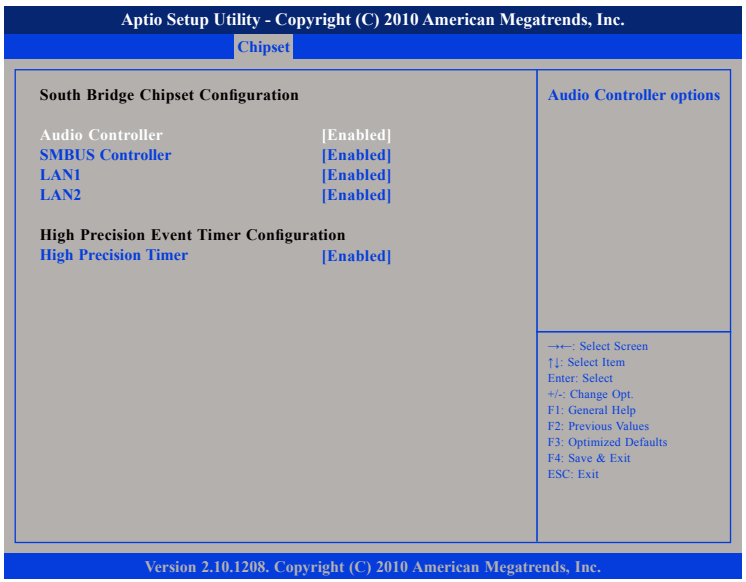
Select the size of the graphics memory aperture and untrusted space used by the integrated graphics device.

South Bridge Chipset Configuration

This section is used to configure the north bridge features.



Audio Controller
Enables or disables the audio controller.

SMBUS Controller
Enables or disables the SMBus controller.

LAN1 and LAN2
Enables or disables LAN1 or LAN2.

High Precision Timer
Enables or disables the high precision event timer.

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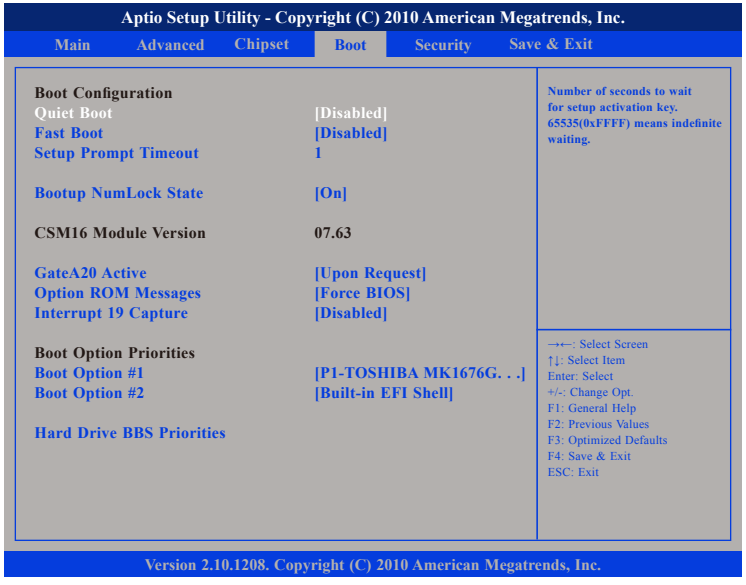
Boot

This section is used to configure the boot features.



Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

Fast Boot

Disabled Displays normal POST messages.

Setup Prompt Timeout

This section configures the number of seconds to wait for the setup activation key.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

GateA20 Active

Upon Request	GA20 can be disabled using BIOS services.
Always	Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

This field is used to set display mode for Option ROM. The options are Force BIOS and Keep Current.

Interrupt 19 Capture

Allows Option ROMs to trap Interrupt 19 when enabled.

Boot Option Priorities

This field is used to adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

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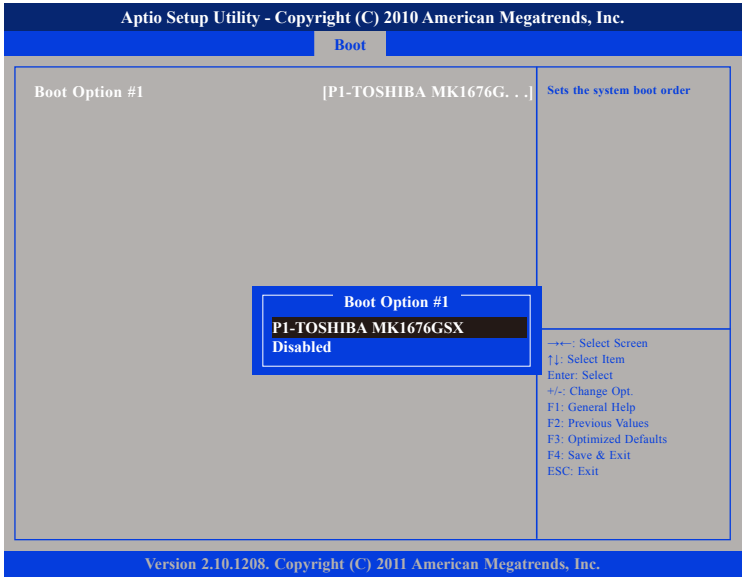
Hard Drive BBS Priorities (Boot Option #1)



Sets the first legacy device to boot from.

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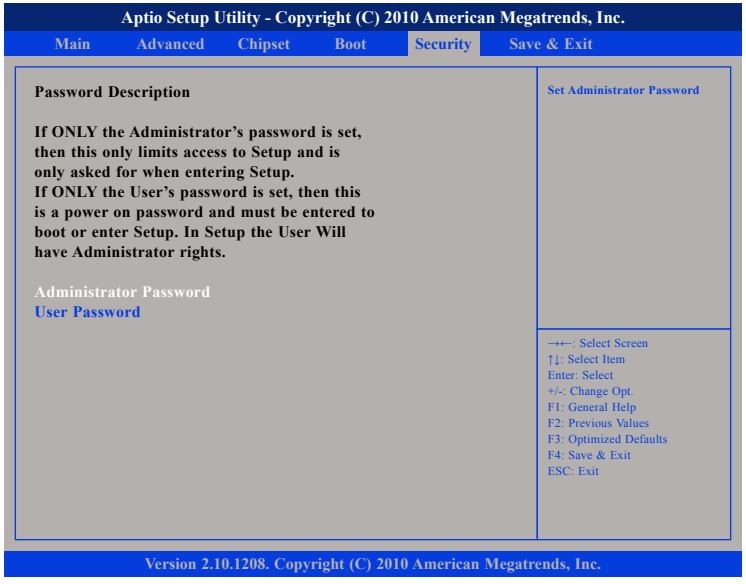
Security


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main
Advanced
Chipset
Boot
Security
Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User Will have Administrator rights.
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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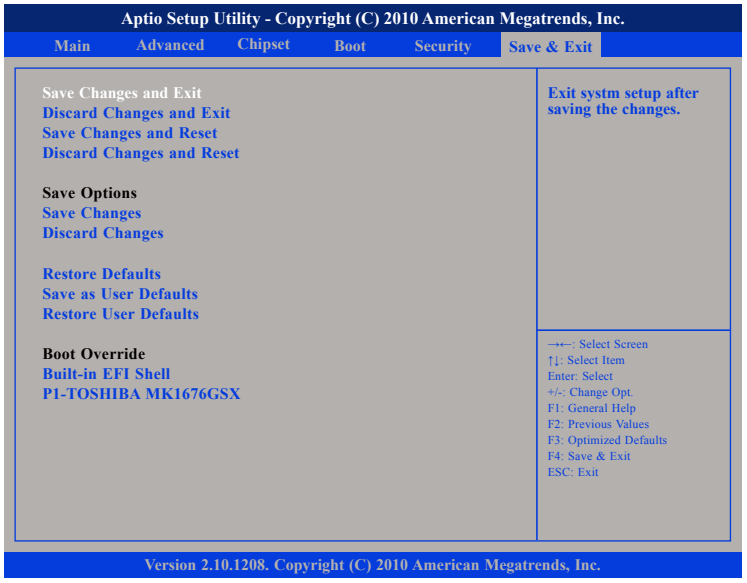
Administrator Password
Select this to reconfigure the administrator's password.

User Password
Select this to reconfigure the user's password.

Save & Exit



Save Changes and Exit
To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Exit
To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

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Save Changes and Reset
To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset
To exit the Setup utility and reboot the system without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Save Changes
To save changes and continue configuring the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes
To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

Restore Defaults
To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Save as User Defaults
To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Restore User Defaults
To restore the BIOS to user default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Built-in EFI Shell
Launches the EFI shell.

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Appendix A: Power Consumption

Test Configuration

System Configuration	Sys#1
Chassis	CHASSIS NISE90
CPU	Intel® Atom™ Processor E640 512K Cache, 1.00 GHz (ES)
Memory	On board memory 1GB DDR2
Mother board	NISB90 REV:B (A3)
HDD	HITACHI 250GB 7200rpm 8Mb HTS723225L9A360 SATA-II
FDD	N/A
CD-ROM	N/A
CFast	N/A
Power Supply	POWER ADAPTER SPI:G.P FSP120-AAB(N091)
Add-on Card	N/A
CPU Cooler	NISE90 HEATSINK
System FAN	N/A
Keyboard	LEMEL B-5201-P
Mouse	GENIVS EASY MOUSE USB

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Power Consumption Management

Purpose

The purpose of the power consumption test is to verify the power dissipation of system, and the loading of power supply.

Test Equipment

PROVA CM-07 AC/DC CLAMP METER

Device Under Test

DUT: sys#1/

Test Procedure

1. Power up the DUT, boot into Windows XP
2. Entering standby mode (HDD power down)
3. Measure the power consumption and record it.
4. Run Burn-in test program to apply 100% full loading
5. Measure the power consumption and record it.

Test Data

	Sys #1
	+24V
Full-Loading Mode	1.42A
Total	17.04W
Standby S1 Mode	N/A
Total	N/A

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Appendix B: GPI/O Programming Guide

Digital I/O (Digital Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the Digital I/O pins in the NISE 90. The pin definition is shown in the following table:

PIN	Description	PIN	Description
1	GPO21	2	GPO24
3	GPO27	4	+5V
5	GND	6	GPO20
7	GPO23	8	GPO26
9	+5V	10	GND
11	GPO22	12	GPO25
13	GPO28	14	GPO29
15	N/A	16	GPI61
17	GPI64	18	GPI67
19	+5V	20	GND
21	GPI60	22	GPI63
23	GPI66	24	+5V
25	GND	26	GPI62
27	GPI65	28	GPI68
29	GPI69	30	N/A

IO base address : A00h

GPO20 Read/Write GPIO data by I/O port A04h(Bit0)
GPO21 Read/Write GPIO data by I/O port A04h(Bit1)
GPO22 Read/Write GPIO data by I/O port A04h(Bit2)
GPO23 Read/Write GPIO data by I/O port A04h(Bit3)
GPO24 Read/Write GPIO data by I/O port A04h(Bit4)
GPO25 Read/Write GPIO data by I/O port A04h(Bit5)
GPO26 Read/Write GPIO data by I/O port A04h(Bit6)
GPO27 Read/Write GPIO data by I/O port A04h(Bit7)
GPO28 Read/Write GPIO data by I/O port A01h(Bit4)
GPO29 Read/Write GPIO data by I/O port A01h(Bit3)

GPI60 Read/Write GPIO data by I/O port A05h(Bit0)
GPI61 Read/Write GPIO data by I/O port A05h(Bit1)
GPI62 Read/Write GPIO data by I/O port A05h(Bit2)
GPI63 Read/Write GPIO data by I/O port A05h(Bit3)
GPI64 Read/Write GPIO data by I/O port A05h(Bit4)
GPI65 Read/Write GPIO data by I/O port A05h(Bit5)
GPI66 Read/Write GPIO data by I/O port A05h(Bit6)
GPI67 Read/Write GPIO data by I/O port A05h(Bit7)
GPI68 Read/Write GPIO data by I/O port A01h(Bit6)
GPI69 Read/Write GPIO data by I/O port A01h(Bit5)

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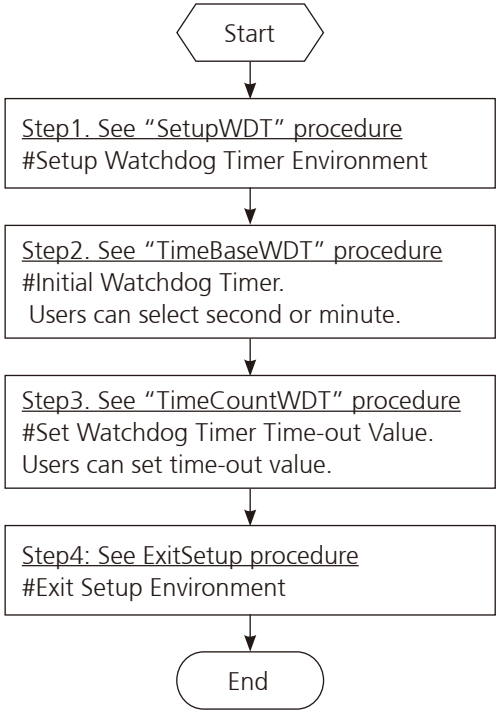
Appendix C: Watchdog Timer

NISB 90 Watch Dog Function Configuration Sequence Description:



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```
;-----------------------------------------------
SetupWDT        PROC
        mov     dx, 2eh
        mov     al, 087h
        out     dx, al
        nop
        nop
        mov     al, 01h
        out     dx, al
        nop
        nop
        mov     al, 55h
        out     dx, al
        nop
        nop
        out     dx, al      ;Write operations to special address
                            port (2E) for entering MB PnP Mode.

        mov     al, 07h
        out     2eh, al
        mov     al, 07h     ;Select logical device for Watch Dog.
        out     2fh, al
        ret
SetupWDT        ENDP

;-----------------------------------------------
TimeBaseWDT             PROC
        mov     al, 72h
        out     2eh, al
        mov     al, 10h     ;Set WDT reset upon PWROK
        or      al, 80h     ;Here!! set 80h for second, set 00h for minute
        out     2fh, al
        ret
TimeBaseWDT     ENDP

;-----------------------------------------------
TimeCountWDT    PROC
        mov     al, 73h     ;WDT Time-out register.
        out     2eh, al
        mov     al, 03h     ;Here!! Set count 3.
        out     2fh, al
        ret
TimeCountWDT    ENDP

;-----------------------------------------------
ExitSetup           PROC
        mov     al, 02h
        out     2eh, al
        mov     al, 02h
        out     2fh, al
        ret
ExitSetup           ENDP
;-----------------------------------------------
```


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